

# First Record of the Subcortical Beetle Genus *Bitoma* (Coleoptera: Zopheridae) in Korea

Seung-Gyu Lee, Jongok Lim\*

Division of Forest Biodiversity, Korea National Arboretum, Pocheon 11186, Korea

## ABSTRACT

The family Zopheridae Solier consist of members from several previous families, Zopherinae Solier, Monommatinae Blanchard and Colydiinae Erichson, and more than 1,700 described species are placed in the Zopheridae. They are widely distributed in all major biogeographical regions. The zopheridine genus *Bitoma* Herbst comprise more than 30 species worldwide including four Palaearctic species. A taxonomic study of the genus *Bitoma* in Korea is presented. The genus *Bitoma* and its two species, *B. crenata* (Fabricius) and *B. siccana* (Pascoe), are new to the Korean Peninsula. A key, diagnoses, habitus photographs, and illustrations of aedeagus of the Korean *Bitoma* species are provided.

**Keywords:** Coleoptera, Tenebrionoidea, Zopheridae, *Bitoma*, Korea

## INTRODUCTION

The genus *Bitoma* Herbst, 1793 includes four species in the Palaearctic region (Ślipiński and Schuh, 2008). In East Asia, only one species, *B. siccana* (Pascoe, 1863), is recorded in China and Japan. Members of the genus have been known to be found under the bark of dead trees with a fungus (Lord et al., 2011).

While studying Korean subcortical beetles, the genus *Bitoma* and its two species, *B. crenata* (Fabricius, 1775) and *B. siccana*, are identified for the first time in the Korean Peninsula. We provide a key, habitus photographs, diagnose and illustrations of genitalian structure of the species.

All specimens are deposited in the Entomological Collection of Korea National Arboretum (KNAE), Pocheon, Korea. The morphological terminology used here follows Lord et al. (2011).

## SYSTEMATIC ACCOUNTS

Order Coleoptera Linnaeus, 1758  
Family Zopheridae Solier, 1834

Tribe Sychitini Erichson, 1845

### Key to Korean species of the genus *Bitoma*

1. Body less elongate, about 3.0 times as long as wide (Fig. 1A), with relatively short pubescence; antennomere 9 distinctly enlarged (Fig. 2A); pronotum subquadrate, more than 1.1 times wider than long; scutellum subtrapezoidal, distinctly transverse (Fig. 2C); elytral surface without red spots ..... *B. crenata*
- Body more elongate, more than 3.5 times longer than wide (Fig. 1B), with relatively long pubescence; antennomere 9 slightly enlarged (Fig. 2B); pronotum quadrate, about as wide as long; scutellum subtriangular, about as long as wide (Fig. 2D); elytral surface with red spots ... *B. siccana*

<sup>1</sup>\*Genus *Bitoma* Herbst, 1793

*Bitoma* Herbst, 1793: 25. Type species: *Tritoma crenata* Fabricius, 1775.

*Ditoma* Illiger, 1807: 320. Type species: *Tritoma crenata* Fabricius, 1775.

*Eulachus* Erichson, 1845: 275. Type species: *Eulachus costatus* Erichson, 1845.

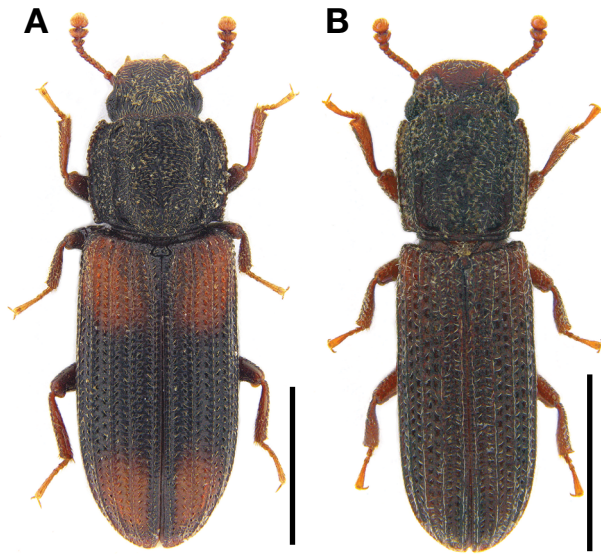
*Euditomum* Gistel, 1857: 26. Type species: *Ditoma unicolor*

Korean name: <sup>1</sup>\*길쪽혹거저리속 (신칭)

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**\*To whom correspondence should be addressed**

Tel: 82-31-540-1082, Fax: 82-31-540-1070  
E-mail: jolim79@korea.kr



**Fig. 1.** *Bitoma crenata* (Fabricius). A, Habitus in dorsal view. *Bitoma siccana* (Pascoe). B, Habitus in dorsal view. Scale bars: A, B=1.0 mm.

Gistel, 1857.

*Phormesa* Pascoe, 1863a: 31. Type species: *Phormesa lunaris* Pascoe, 1863a.

*Coniophaea* Pascoe, 1863b: 90. Type species: *Coniophaea exarata* Pascoe, 1863b.

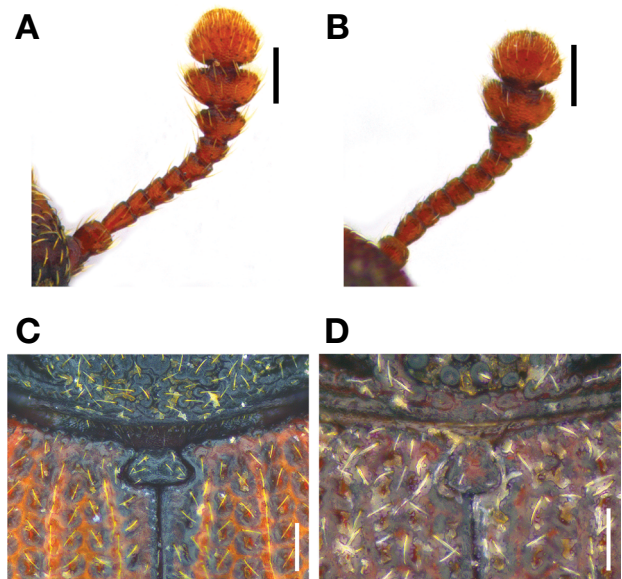
*Xuthia* Pascoe, 1863c: 128. Type species: *Xuthia siccana* Pascoe, 1863c.

*Synchytodes* Crotch, 1873: 45. Type species: *Bitoma quadruttata* Say, 1827.

**Diagnosis.** Body distinctly flattened; antennal setation sparse; subantennal grooves reduced or absent; antennae 11-articled with terminal two antennomeres clubbed (rarely antennomere 9 expanded apically); antennomere 3 slightly elongate, slightly longer than 4; lateral margins of frons continuous with supraocular carinae; pronotal disc carinate, with more than two pairs of longitudinal carinae, lateral margins serrulate to denticulate; procoxal cavities open; metacoxae narrowly separated, separation less than metacoxal length; tarsal formula 4-4-4 (Lord et al., 2011; Ivie et al., 2016).

**Distribution.** Worldwide (Afrotropical, Australasian, Hawaiian, Nearctic, Neotropical, Oriental and Palearctic regions) (Ivie et al., 2016).

**Remarks.** This genus is similar to *Microprius* Fairmaire, 1868 and *Lasconotus* Erichson, 1845, but can be distinguished by the following characters: *Bitoma* differs from



**Fig. 2.** *Bitoma crenata* (Fabricius). A, C: A, Antenna; C, Scutellum. *Bitoma siccana* (Pascoe). B, D: B, Antenna; D, Scutellum. Scale bars: A-D=0.1 mm.

*Microprius* by the antennal groove long, reaching to the posterior margin of eye and differs from *Lasconotus* by the terminal two antennomeres clubbed and the procoxal cavities closed (Lord et al., 2011).

<sup>1</sup>\* *Bitoma crenata* (Fabricius, 1775)

(Figs. 1A, 2A, C, 3A, 4)

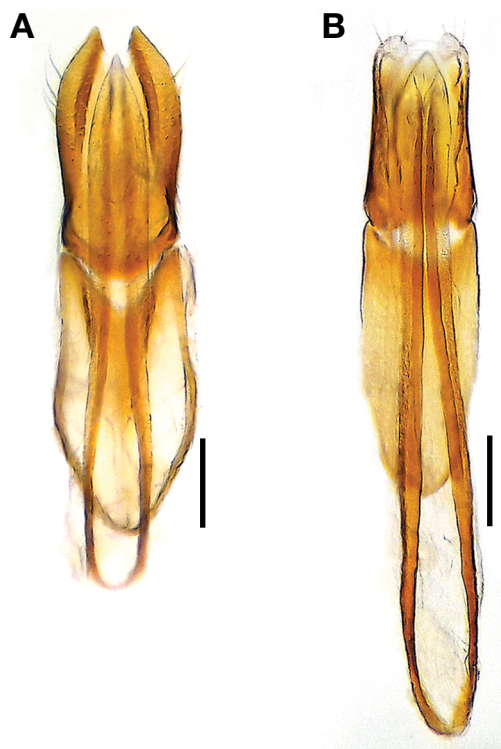
*Tritoma crenata* Fabricius, 1775: 69.

See Ślipiński and Schuh (2008: 80) for more synonymies.

**Material examined.** 3 exx., Korea: Gyeonggi-do: Pocheon-si, Soheul-eup, Korea National Arboretum, 37°44'59.69"N, 127°10'03.85"E, Alt. 113 m, 11 Aug 2017, Lee S.-G. leg., under bark of *Quercus* spp.

**Diagnosis.** Length 3.0–3.5 mm; body (Fig. 1A) subparallel-sided, about 3.0 times as long as wide. Body black, with two pairs of red spots on elytra; antennae and legs reddish brown; surface slightly glossy, with granular punctures and pubescence. *Head:* Subquadrate, about 0.70 times as wide as pronotal width, widest across eyes; front of eyes broadly round in antero-lateral margins, subtruncate in anterior margin; eyes moderately in size and laterally prominent. Antennae (Fig. 2A) about as long as head width; antennomeres 4–9 subquadrate to slightly transverse, antennomere 9 distinctly expanded. *Thorax:* Pronotum slightly transverse, 1.10–1.15 times wider than long, widest at apical third,

Korean name: <sup>1</sup>\*길쭉혹거저리 (신칭)



**Fig. 3.** *Bitoma crenata* (Fabricius). A, Aedeagus. *Bitoma siccana* (Pascoe). B, Aedeagus. Scale bars: A, B=0.1 mm.

slightly narrower than elytral width; disc with two pairs of longitudinal carinae; anterior margin slightly emarginate and posterior margins subtruncate; lateral margins almost straight and parallel-sided, with minute serration. Scutellum (Fig. 2C) subtrapezoidal, distinctly transverse. Procoxal cavities narrowly open. Mesocoxae moderately separated, separation less than metacoxal length; mesoventral process truncate at apex, longer than metaventrite. Elytra parallel-sided, round at apex; elytron about 4.2 times as long as wide, with granular punctures and five longitudinal carinae, each ridge parallel-sided, not connected apically. Aedeagus as in Fig. 3A.

**Distribution.** Korea (new record), China, Japan, Kazakhstan, Mongolia, Russia (East Siberia, Far East, West Siberia), Europe, North Africa (Algeria, Tunisia) and Nearctic region.

**Remarks.** This species can be distinguished from other *Bitoma* species by the large red spots on elytra and apically enlarged antennomere 9 (Lord et al., 2011). All Korean specimens were collected from under bark of dead *Quercus* spp.

<sup>1</sup>\**Bitoma siccana* (Pascoe, 1863) (Figs. 1B, 2B, D, 3B)  
*Xuthia siccana* Pascoe, 1863c: 128.

Korean name: <sup>1</sup>\*참길쪽흑거저리(신칭)



**Fig. 4.** Microhabitat. Stump of dead oak (*Quercus* sp.) and adult of *Bitoma siccana*.

*Ditoma lyctiformis* Wollaston, 1867: 63.

See Aoki (2013: 93) for more synonymies.

**Material examined.** 4 exx., Korea: Gyeonggi-do: Pocheon-si, Soheul-eup, Korea National Arboretum, 37°44'59.69"N, 127°10'03.85"E, Alt. 113 m, 11 Aug 2017, Lee S.-G. leg., under bark of *Quercus* spp.; 3 exx., same data as the former except '8 Sep 2017'.

**Diagnosis.** Length 2.5–3.5 mm; body (Fig. 1B) parallel-sided, 3.6–4.0 times as long as wide. Body reddish brown to reddish black; antennae and legs reddish brown; surface matt, with granular punctures and pubescence. **Head:** Subquadrate, about 0.80–0.85 times as wide as pronotal width, widest across eyes; front of eyes broadly round in antero-lateral margins, subtruncate in anterior margin; eyes relatively small and laterally prominent. Antennae (Fig. 2B) slightly shorter than head width; antennomeres 4–9 subquadrate to slightly transverse, antennomere 9 slightly expanded. **Thorax:** Pronotum quadrate, about as long as wide, widest near apex, slightly narrower than elytral width; disc with two pairs of longitudinal carinae; anterior and posterior margins subtruncate; lateral margins parallel-sided, with minute serration. Scutellum (Fig. 2D) subtriangular, about as long as wide. Procoxal cavities narrowly open. Mesocoxae narrowly separated; mesoventral process pointed at apex, longer than metaventrite. Elytra parallel-sided, round at apex; elytron about 4.5 times as long as wide, with granular punctures and five longitudinal carinae, each ridge parallel-sided, not connected apically. Aedeagus as in Fig. 3A.

**Distribution.** Korea (new record), Bhutan, China, India, Hong Kong, Japan, Nepal, Saudi Arabia, Taiwan, New Guinea (West Papua), North Africa (Algeria, Egypt), Afro-

tropical, Neotropical and Oriental regions.

**Remarks.** All Korean specimens were collected from under bark of dead *Quercus* spp. with *B. crenata*.

## ACKNOWLEDGMENTS

We thank Dr. Hideto Hoshina (Fukui University, Fukui, Japan) for providing related references. This study was supported by Korea National Arboretum, Korea Forest Service (as project no. KNA 1-1-24, 18-2).

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Received September 29, 2017  
Revised November 16, 2017  
Accepted January 11, 2018